ABSTRACT OF THE DISCLOSURE

Nucleic acid compositions encoding polypeptide products with diglyceride acyltransferase and/or monoacylglycerol acyltransferase activity, as well as the polypeptide products encoded thereby, i.e., mammalian DGAT2α and MGAT1 polypeptide products, and methods for producing the same, are provided. Also provided are: methods and compositions for modulating DGAT2α and MGAT1 activity; DGAT2α and MGAT1 transgenic cells, animals and plants, as well as methods for their preparation; and methods for making diglyceride, diglyceride compositions, triglycerides and triglyceride compositions, as well as the compositions produced by these methods. The subject methods and compositions find use in a variety of different applications, including research, medicine, agriculture and industry applications.